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10/009,488	12/13/2001	Rikiya Yamashita	DAIN:658	4510

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EXAMINER

YUAN, DAH WEI D

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 02/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/009,488

Applicant(s)

YAMASHITA ET AL.

Examiner

Dah-Wei D. Yuan

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/13/01.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**BATTERY, TAB OF BATTERY AND METHOD OF MANUFACTURE THEREOF**

Examiner: Yuan      S.N. 10/009,488      Art Unit: 1745      February 1, 2004

**Detailed Action**

1. The Applicant's amendment filed on December 2, 2003 was received. The specification was amended. Claims 2,9 were cancelled. Claims 1,8,12 were amended. Claims 13-22 were added.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on June 2, 2003.

***Drawings***

3. The objection on drawing is withdrawn, because the specification has been amended such that the two reference numerals (12a and 12b) are no longer recited in the instant specification.

***Claim Rejections - 35 USC § 102***

4. Claims 1,4-8,11,13-22 are rejected under 35 U.S.C. 102(a) as being anticipated by Yamashita et al. (JP 2001-059187).

With respect to claim 1, Yamashita et al. teach a polymer battery comprising a sheathing object (C) (a battery module) and metal tabs (T), which extend outside from the sheathing object. See Figure 3. The periphery section of the sheathing object (C) is shut by heat sealing the innermost resin layer along with the metal tab. The metal tab is made of metal such as aluminum or nickel. The aluminum foil is first subjected to a solution treatment, including etching, acid or

alkaline cleaning (a degreasing process), to remove aluminum oxide followed by various chemical processes, including phosphate coat processing, chromic acid coat processing and fluoride coat processing, in order to improve resistance of the aluminum metal. See Abstract; Paragraphs 9,17,18; Claim 6.

With respect to claim 4, Yamashita et al. teach the acid resistance of the aluminum metal can be improved by at least one solution selected from the groups consisting of phosphate treatment, chromate treatment, fluoride treatment and triazine thiol treatment. See Claim 3.

With respect to claims 5,14,18, the sheathing object further comprises a base material layer (11), a barrier layer (12), an interlayer (13), an innermost layer (14) and adhesive layers (15). See Figure 2. The barrier layer is made of a metallic foil, in which a first surface is chemically treated by at least one solution selected from the groups consisting of phosphate treatment, chromate treatment, fluoride treatment and triazine thiol treatment. See paragraph 13; claim 3.

With respect to claims 6,15,19, the second surface of the barrier layer is also chemically treated as described above. The resulting corrosion-resistant layer is disposed between the adhesive layer (15) and the barrier layer (12). See Figure 2.

With respect to claims 7,16,20, the innermost resin layer is considered as a heat adhesive that wound around the tabs. See paragraph 17.

With respect to claim 8, metal tabs (7) are extended outside the battery through the heat sealed peripheral part of the innermost layer as describe above. The acid resistance of the metal tab can be improved by at least one solution selected from the groups consisting of phosphate

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treatment, chromate treatment, fluoride treatment and triazine thiol treatment. See Paragraphs 9,17,19; Claim 6.

With respect to claim 11, Yamashita et al. teach the acid resistance of the aluminum metal can be improved by at least one solution selected from the groups consisting of phosphate treatment, chromate treatment, fluoride treatment and triazine thiol treatment. See Claim 3.

It is noted that claims 13,17,21,22 are product-by-process claims. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Since Yamashita's actual corrosion resistant tab is similar to that of the Applicant's, Applicant's process is not given patentable weight in this claim.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said priority papers (JP 2000-117836, 2001-9706) has not been made of record in accordance with 37 CFR 1.55. See MPEP §201.15.

5. Claims 1,7,8,13,16,17,20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Kahata et al. (JP 10-312788).

With respect to claims 1,8, Kahata et al. teach a battery comprising a sheathing material (6) and a positive electrode lead (5) (tab), which is extended outside from the battery. See Figure

2. The sheathing material comprises polyester film/aluminum foil/polyester film/ionomer resin layers. The suitable electrode lead includes aluminum, nickel, titanium, copper and stainless steel. The peripheral part of the electrode lead is heat sealed by the innermost layer in the sheathing material. A surface agent (4) is applied to the surface of the electrode lead (5), particularly the area to be in contact with the seal portion of the sheathing material. The agent can be a chromate or a phosphoric acid chromate, which acts as a corrosion-resistant layer. Prior to the treatment, the aluminum tab is first immersed in a solution of  $\text{Cr}(\text{OH})_2\text{HCrO}_4$ ,  $\text{CrFe}(\text{CN})_5$  and  $\text{AlOOH}$  (a degreasing solution). See Abstract; Claims 1-3,5,6; Paragraphs 9,19,21.

With respect to claim 7,16,20 the innermost ionomer resin layer is considered as a heat adhesive that wound around the tabs. See Paragraph 17.

It is noted that claims 13,17,21,22 are product-by-process claims. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re. Thorpe, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Since Kahata's actual corrosion resistant tab is similar to that of the Applicant's, Applicant's process is not given patentable weight in this claim.

***Claim Rejections - 35 USC § 103***

6. Claims 3,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (JP 2001-059187) as applied to claims 1,4-8,11,13-22 above, and further in view of Affinito (US 5,662,746).

Yamashita et al. disclose a polymer battery comprising a metal tab as described above in Paragraph 4. However, Yamashita et al. do not discuss the use of a phenolic resin as a corrosion-resistant layer on the tab. Affinito teaches the treatment of conversion-coated metal with an aqueous solution comprising a phenolic resin and a Group IVA metal ion, namely zirconium, titanium, hafnium, and mixtures thereof. The suitable metal substrates include steel, aluminum, zinc, and their alloys. The coating can protect the metal surface from corrosion and for aesthetic reasons. See Column 1, Lines 7-19. Therefore, it would have been obvious to one of ordinary skill in the art to use a resin containing a phenolic resin and a metal of zirconium, titanium or hafnium on the metal tab of Yamashita et al., because Affinito teaches the phenolic resin coating can protect the metal surface from corrosion.

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morris (US 5,585,206) in view of Yamashita et al. (JP 2001-059187).

Morris teaches the formation of battery tabs by slitting a portion of current collector (metal sheet). See Abstract. However, Morris does not teach the use of a chemical conversion treatment on the resulting battery tabs. Yamashita et al. teach the treatment of metal tabs including the steps of (1) degreasing with an acid or alkali solutions, (2) applying at least one

solution selected from the groups consisting of phosphate treatment, chromic acid treatment, fluoride treatment and triazine thiol treatment and (3) drying the solution to form a corrosion-resistant layer. See Paragraphs 9,17,19; Claim 6. Therefore, it would have been obvious to one of ordinary skill in the art to apply the surface treatment procedures described above on the metal tab of Morris, because Yamashita et al. teach the corrosion resistance of the resulting battery tab can be improved. Also, it would have obvious to one of ordinary skill in the art to heat the film at an elevated temperature to evaporate the solution and solidify the corrosion resistant film on the metal tab. It is the position of the examiner that disclosure provides no evidence of criticality with regard to the temperature range, not lower than 180°C, in the heat treatment of the layer.

8. Claims 3,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kahata et al. (JP 10-312788) as applied to claims 1,7,8,13,16,17,20-22 above, and further in view of Affinito (US 5,662,746).

Kahata et al. disclose a battery comprising a metal tab, on which a surface agent is applied as described above in Paragraph 5. However, Kahata et al. do not discuss the use of a phenolic resin as a corrosion-resistant layer on the tab. Affinito teaches the treatment of conversion-coated metal with an aqueous solution comprising a phenolic resin and a Group IVA metal ion, namely zirconium, titanium, hafnium, and mixtures thereof. The suitable metal substrates include steel, aluminum, zinc, and their alloys. The coating can protect the metal surface from corrosion and for aesthetic reasons. See Column 1, Lines 7-19. Therefore, it would have been obvious to one of ordinary skill in the art to use a resin containing a phenolic



resin and a metal of zirconium, titanium or hafnium on the metal tab of Kahata et al., because Affinito teaches the phenolic resin coating can protect the metal surface from corrosion.

9. Claims 4,11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kahata et al. (JP 10-312788) as applied to claims 1,7,8,13,16,17,20-22 above, and further in view of Mori (US 6,011,135).

Kahata et al. disclose a battery comprising a metal tab, on which a surface agent is applied as described above in Paragraph 4. However, Kahata et al. do not discuss the use of a triazine thiol treatment on the tab. Mori teaches the treatment of metal such as copper and aluminum by dipping the metal in an aqueous solution or organic solution of triazine thiol. Mori discloses the corrosion resistance of the resulting metal is improved. See Column 6, Lines 12-15; Column 14, Lines 20-24. Therefore, it would have been obvious to one of ordinary skill in the art to use a triazine thiol treatment on the metal tab of Kahata et al., because Mori teaches the triazine thiol coating can improve the corrosion resistance of the metal.

#### ***Response to Arguments***

10. Applicant's arguments filed on December 2, 2003 have been fully considered but they are not persuasive.

*Applicant's principle arguments are*

*The recitation "the part of the tab corresponding to the corrosion-resistant layer has been degreased" in the amendment is not taught or suggested in the prior art.*

In response to Applicant's arguments, please consider the following comments.

Yamashita et al. teach the aluminum foil is first cleaned (degreased) by either etching, acid or alkaline cleaning, before the corrosion resistance treatment. Similarly, Kahata et al. teach the aluminum tab is first degreased in a solution of  $\text{Cr}(\text{OH})_2\text{HCrO}_4$ ,  $\text{CrFe}(\text{CN})_5$  and  $\text{AlOOH}$  before the corrosion resistance treatment.

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295.

The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and After Final communications.

Dah-Wei D. Yuan  
February 1, 2004

  
Patrick Ryan  
Supervisory Patent Examiner  
Technology Center 1700